

Documentation.—LACMIP hypotype 11433. Four thin sections and 67 polished sections from nine coralla from loc. 2548 were studied. Most of the corallites were slightly crushed so that the axial structures could not be distinguished from broken septal ends. Enough uncrushed corallites were present, however, to permit specific identification.

Discussion.—The corallite diameters, numbers of septa, simplicity of the axial structure, thinness of the structures, lengths of minor septa, and other features of the Arrow Canyon specimens are very close to the type specimens from the McCloud Limestone of Northern California. In Arrow Canyon, *P. stevensi* occurs in the same bed as *Neomultiithecopora mcutcheonae*. Both of these species are present in fusulinid zone F of the McCloud Limestone, although the occurrences of *N. mcutcheonae* is stratigraphically above that of *Paraheritschioides stevensi* in this area.

Langenheim (1964) and Langenheim and Langenheim (1965) reported *Durhamina cordillerensis* (Easton, 1960) in unit 233 in Arrow Canyon. The specimens apparently are lost. Those figured by Langenheim (1964, Pl. 2, figs. 4–5) have crushed axes that greatly resemble crushing in our specimens of *Paraheritschioides stevensi* from uphill in unit 237. We found float specimens of this species on top of unit 233 but no fasciculate corals in place. Thus, we tentatively conclude that *Durhamina cordillerensis* does not occur at Arrow Canyon and that the determination was based on float specimens of *Paraheritschioides stevensi* from unit 237.

Family LITHOSTROTIONIDAE d'Orbigny, 1852

Subfamily THYSANOPHYLLINAE Hill, 1981

Genus STYLASTRAEA Lonsdale, 1845

STYLASTRAEA ROWETTI n. sp.

Figures 5.3–5.6, 6.1

Diagnosis.—Species of *Stylastraea* characterized by long, thin, lath-like columella, some large lonsdaleoid dissepiments, and few minor septa.

External description.—Corallum cerioid, hemispheroidal, maximum observed diameter 30 cm; corallites to 20 cm diameter, with steep, septa-lined walls and domed floors with central lath-like columella.

Transverse section description.—Corallites polygonal, 5–7 sided, 6.5–7.0 mm wide at greatest diameter; septa of two orders, 14–20 each; major septa 3–4 mm long, extending into tabularium 1–1.5 mm; minor septa about 1.0 mm long, absent from many corallites or represented by septal spines, not crossing dissepimentarium; axial structure generally simple lath-like structure, 1.0–3.0 mm long, straight, generally thin, rarely with one, very rarely with two, short, septal lamellae, some connected to elongate counter septa, impersistent in many corallites; dissepimentarium as much as 4 mm wide, more commonly 2 mm wide, lonsdaleoid in parts of largest corallites; dissepiments herringbone, pseudoherringbone, or lonsdaleoid; wall straight to faintly sinuous, 0.1–0.2 mm wide.

Longitudinal section description.—Dissepimentarium 2.0–3.0 mm wide, of 1–3 ranks of moderately steeply dipping, different size dissepiments (some highly inflated); tabulae/tabellae gently sloping inward and upward to columella where present, straight or domed elsewhere, many with downturned edges; columella thin, sinuous, discontinuous in places.

Collections.—LACMIP holotype 11436; paratypes 11437–11440. Five thin sections and 104 polished sections from 11 coralla from LACMIP loc. 2548 were studied.

Discussion.—We have referred this species to *Stylastraea* in spite of the fact that the axial structure of the holotype of the type species, *S. inconferta* Lonsdale, 1845, from the Carboniferous of the Ural Mountains, remains poorly known notwithstanding the redescription and figures of Smith and Lang (1930, p. 185, Pl. 7, figs. 9–13). The transverse sections show (Smith and Lang, 1930, figs. 9–11) some kind of axial structure, perhaps fairly complex, but the longitudinal sections suggest (Smith and Lang, 1930, figs. 12, 13) a simpler and impersistent one. Until the axial structure of the type species has been defined more carefully, the genus will continue to be broadly interpreted to include species with different kinds of axial structures, or even lacking them.

Most corallites of *S. rowetti* have a long, straight, lath-like columella, some with 1–2 extremely short septal lamellae. In this character alone, it differs from the following species which have no or extremely rare axial structures: *S. toulai* (Stuckenberg, 1895) from the Upper Carboniferous and Lower Permian of Timan, Spitsbergen, and the Canadian Arctic Archipelago (Fedorowski, 1965, 1967; Birkenmajor and Fedorowski, 1980); *S. tenuiseptata* Fedorowski, 1965, from the Lower Permian of Spitsbergen; *S. minima* Fedorowski, 1967, from the Lower Permian of Spitsbergen.

In corallite diameters and numbers of septa, *S. rowetti* resembles the type species, *S. inconferta* Lonsdale, 1845, but *S. rowetti* has more lonsdaleoid dissepiments in some corallites, far fewer minor septa, and probably a less complex axial structure.

Stylastraea sp. of LeMone et al. (1976) from the Lower Permian Hueco Limestone of El Paso County, Texas, is somewhat similar to *S. rowetti*, but the latter has much larger corallites with axial structures; *S. branisai* Wilson, 1990, from the Lower Permian Copacabana Limestone of Bolivia, has larger corallites, somewhat fewer septa, and more variable corallites (many with more lonsdaleoid dissepiments) than *S. rowetti*. *Stylastraea* was cited, without description or figures, by Stevens and Rycerski (1983) as occurring in the Permian of northern British Columbia, the central Great Basin, and eastern California. It was listed by Stevens et al. (1990) as present in the central Cordillera. These citations need confirmation by descriptions, illustrations, and locality records, but do suggest that the genus may eventually prove to be more widespread in western North America than presently indicated by described or illustrated specimens.

Suborder LONSDALEIINA Spasskiy, 1974

Family WAAGENOPHYLLIDAE Wang, 1950

Subfamily WAAGENOPHYLLINAE Wang, 1950

Genus HERITSCHIELLA Moore and Jeffords, 1956

HERITSCHIELLA GIRTYI (Moore and Jeffords, 1941)

Figures 4.8–4.10, 5.1, 5.2

Heritschia girtyi MOORE AND JEFFORDS, 1941, p. 98, Pl. 4, figs. 5–8, Pl. 7, figs. 1, 2, Pl. 8, fig. 5; SHIMER AND SHROCK, 1944, p. 87, Pl. 29, figs. 12, 13.

H.[eritschiella] girtyi MOORE AND JEFFORDS, 1956, p. 310, fig. 210, 2a, 2b; HILL, 1981, p. 412, fig. 272, 2a, 2b.

Documentation.—LACMIP hypotypes 11434–11435. Three thin sections and 11 polished sections from three fragmentary corallites from LACMIP locality 2548 were studied. These cor-

FIGURE 5—1, 2, *Heritschiella girtyi* (Moore and Jeffords), longitudinal sections, 1, LACMIP hypotype 11435, Kansas; 2, LACMIP hypotype 11434, Arrow Canyon. 3–6, *Stylastraea rowetti* n. sp., LACMIP holotype 11436. 3–5, transverse sections; 6, longitudinal section. All figures ×3.